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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/509,707	07/28/2005	Norbert Polzin	10191/3637	2425
26646	7590	12/16/2005	EXAMINER	
KENYON & KENYON ONE BROADWAY NEW YORK, NY 10004			MOFFAT, JONATHAN	
			ART UNIT	PAPER NUMBER
			2863	

DATE MAILED: 12/16/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

AKC

<b>Office Action Summary</b>	<b>Application No.</b>		<b>Applicant(s)</b>	
	10/509,707		POLZIN, NORBERT	
	<b>Examiner</b>		<b>Art Unit</b>	
	Jonathan Moffat		2863	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 28 July 2005.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 16-42 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 16-42 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 30 September 2004 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |                                                                                                    |                                                                             |
|----------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)                        | 4) <input type="checkbox"/> Interview Summary (PTO-413)                     |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)               | Paper No(s)/Mail Date. _____                                                |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date <u>9/30/2004</u> .                                                           | 6) <input type="checkbox"/> Other: _____                                    |

## **DETAILED ACTION**

### ***Drawings***

The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they include the following reference character(s) not mentioned in the description: Item 120 in Fig 2. Corrected drawing sheets in compliance with 37 CFR 1.121(d), or amendment to the specification to add the reference character(s) in the description in compliance with 37 CFR 1.121(b) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

### ***Claim Objections***

Claims 19-20, 28, and 40 are objected to because of the following informalities:

In claim 19 the phrase "determined at least one of as a function" is unclear. It is assumed that the applicant intended "determined as a function of one of".

In claim 20, the phrase "wheel dynamics variable representing wheel dynamics" is either unclear or redundant. The claim appears to insufficiently limit the invention and should be rewritten so that it's intended limitations are clear.

In claims 28 and 40, the phrase "times are set at least one of as a function of" is unclear. It is assumed that the applicant intended "times are set as a function of one of"

Appropriate correction is required.

***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

**1.**

Claims 16-17, 19-22, 27-30, 33-34 and 36- 42 are rejected under 35 U.S.C. 102(b) as being anticipated by Boesch (US pat 5721528).

With respect to claim 16, Boesch discloses monitoring the tire condition as a function of a condition of a driving surface on which the vehicle is traveling (Fig 4 and column 3 lines 28-45).

With respect to claim 17, Boesch discloses monitoring performed in at least two different independent monitoring modes as a function of the driving surface, the at least two different individual modes differing by differing calibration data sets (column 2 lines 52-62).

With respect to claim 19, Boesch discloses calibration data sets are determined at least one of as a function of the condition of the driving surface, as a function of a signal representing transmission of force between wheels of the vehicle and the driving surface, and a command initiated by a driver of the vehicle (column 3 lines 39-45).

With respect to claim 20, Boesch discloses that the tire condition is monitored by using a wheel dynamics variable representing wheel dynamics (Fig 1).

With respect to claim 21, Boesch discloses wheel dynamics variable representing the wheel dynamics being determined using the wheel rotational speed (Fig 1).

With respect to claim 22, Boesch discloses the wheel dynamics variable representing tire condition is determined by forming a difference between wheel rotational speeds of at least two wheels (column 2 lines 40-51).

With respect to claim 27, Boesch discloses calibration data sets are determined at pre-definable times using differences between wheel rotational speeds (column 2 lines 52-62).

With respect to claim 28, Boesch discloses that the predefined times are determined at least one of as a function of the condition of the driving surface, as a function of the driving surface condition variable, and by a command initiated by a driver of the vehicle (column 2 lines 52-62).

With respect to claim 29, Boesch discloses that the monitoring of the tire condition is based on forming a difference between wheel rotational speeds, and a malfunction is detected when a currently determined difference between the wheel rotational speeds lies outside a predefined range in relation to a calibration data set valid for the particular condition of the driving surface(column 3 lines 19-45).

With respect to claim 30, Boesch discloses a driver of the vehicle is informed of an occurrence of the malfunction (Fig 1 item 30).

With respect to claim 33, Boesch discloses a system comprising:

- 1) An arrangement to monitor the tire condition of the vehicle (Fig 1).
- 2) Wherein the tire condition is monitored as a function of a condition of a driving surface on which the vehicle is traveling (Fig 4 and column 3 lines 28-45).

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With respect to claim 34, Boesch discloses monitoring performed in at least two different independent monitoring modes as a function of the driving surface, the at least two different individual modes differing by differing calibration data sets (column 2 lines 52-62).

With respect to claim 36, Boesch discloses calibration data sets are determined as a function of the condition of the driving surface (column 3 lines 28-45).

With respect to claim 37, Boesch discloses calibration data sets are determined as a function of a signal representing transmission of force between wheels and the driving surface (column 3 line 44).

With respect to claim 38, Boesch discloses calibration data sets are determined by a command initiated by a driver of the vehicle (column 3 line 44).

With respect to claim 39, Boesch discloses calibration data sets are determined at pre-definable times using differences between wheel rotational speeds (column 2 lines 52-62).

With respect to claim 40, Boesch discloses that the predefined times are determined at least one of as a function of the condition of the driving surface, as a function of the driving surface condition variable, and by a command initiated by a driver of the vehicle (column 2 lines 52-62).

With respect to claim 41, Boesch discloses that the monitoring of the tire condition is based on forming a difference between wheel rotational speeds, and a malfunction is detected when a currently determined difference between the wheel rotational speeds lies outside a predefined range in relation to a calibration data set valid for the particular condition of the driving surface (column 3 lines 19-45).

With respect to claim 42, Boesch discloses tire condition includes at least one of an air pressure prevailing in a tire and a wear condition of a tire (Fig 1 item 30 and Fig 2 item 112).

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2.

In addition to those teachings presented by Boesch addressed supra, claims 18, 32 and 35 are rejected under 35 U.S.C. 103(a) as being unpatentable over Boesch in view of Kuwana (US pat 4984163).

With respect to claims 18 and 35, Boesch discloses defining the condition of the driving surface.

With respect to claims 18 and 35, Boesch fails to disclose that the condition of the driving surface is defined by a signal representing a transmission of force between wheels of the vehicle and the driving surface, the signal defining a time averaging of the transmission of force between the wheels of the vehicle and the driving surface.

With respect to claim 32, Boesch fails to disclose an operating state of a brake system in the vehicle is modified based on the malfunction, the operating state of the brake system being characterized by variables used for the operation of the brake system.

Kuwana teaches, with respect to claims 18 and 35, that the condition of the driving surface is defined by a signal representing a transmission of force between wheels of the vehicle

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and the driving surface, the signal defining a time averaging of the transmission of force between the wheels of the vehicle and the driving surface (column 3 lines 1-45).

It would have been obvious to one of ordinary skill in the art to modify the system of Boesch by looking at wheel rates over time to determine average slippage as taught by Kuwana. This will allow minor bumps to be ignored but cause the system to react to overall roughness and conditions acting much like a filter. This eliminates false alarms.

Kuwana teaches, with respect to claim 32, an operating state of a brake system in the vehicle is modified based on the malfunction, the operating state of the brake system being characterized by variables used for the operation of the brake system (Fig 1 item 60 and Figs 12a-f).

It would have been obvious to one of ordinary skill in the art to modify the system of Boesch by allowing it to alter the response characteristics of the brakes as taught by Kuwana. This is a commonly known application for road condition sensing technology in the art. This allows the vehicle to automatically adjust to unsafe conditions instead of relying on a driver's judgment to drive safer thereby making the vehicle safer overall.

3.

In addition to those teachings presented by Boesch addressed supra, claims 23, 25-26, and 31 are rejected under 35 U.S.C. 103(a) as being unpatentable over Boesch in view of Tashiro (US pat 4777611).

With respect to claims 23 and 25-26, Boesch discloses wheel dynamics based on comparative wheel speeds.

With respect to claim 31, Boesch discloses an alarm (fig 1 item 30).



With respect to claim 23, Boesch fails to disclose a wheel dynamics variable representing the tire condition is determined by forming a difference between wheel rotational speeds of wheels on one axle.

With respect to claim 25, Boesch fails to disclose a wheel dynamics variable representing the tire condition is determined by forming a difference wheel rotational speeds between a sum of wheel rotational speeds of wheels on a front axle and a sum of wheel rotational speeds of wheels on the rear axle, normalized to a vehicle speed.

With respect to claim 26, Boesch fails to disclose a wheel dynamics variable representing the tire condition is determined by forming a difference of wheel rotational speeds between a sum of wheel rotational speeds of wheels on a left side and a sum of wheel rotational speeds of wheels on a right side, normalized to a vehicle speed.

With respect to claim 31, Boesch fails to disclose an optic or acoustic alarm.

Tashiro teaches, with respect to claim 23, a wheel dynamics variable representing the tire condition is determined by forming a difference between wheel rotational speeds of wheels on one axle (column 2 lines 20-30).

It would have been obvious to one of ordinary skill in the art to modify the system of Boesch by additionally monitoring wheel variance across a single axle as taught by Tashiro. This would allow more accurate readings when the vehicle loading is not symmetrical side to side (Boesch column 3 section 1).

Tashiro teaches, with respect to claim 25, a wheel dynamics variable representing the tire condition is determined by forming a difference wheel rotational speeds between a sum of wheel

rotational speeds of wheels on a front axle and a sum of wheel rotational speeds of wheels on the rear axle, normalized to a vehicle speed (Figs 4-5).

It would have been obvious to one of ordinary skill in the art to modify the system of Boesch by additionally monitoring wheel variance between sums of front and rear axle wheel speeds as taught by Tashiro. This would group tires according to how they are most likely actually distributed on the vehicle (Boesch column 3 section 3) as well as compensating for potential vehicle misleading side-to-side (Boesch column 3 section 1).

Tashiro teaches, with respect to claim 26, a wheel dynamics variable representing the tire condition is determined by forming a difference of wheel rotational speeds between a sum of wheel rotational speeds of wheels on a left side and a sum of wheel rotational speeds of wheels on a right side, normalized to a vehicle speed (Figs 4-5).

It would have been obvious to one of ordinary skill in the art to modify the system of Boesch by additionally monitoring wheel variance between sums of side wheel speeds as taught by Tashiro. This would allow more accurate readings when the vehicle loading is not symmetrical side to side (Boesch column 3 section 1).

Tashiro teaches, with respect to claim 31, the driver is informed of a malfunction at least one of optically and acoustically (column 7 lines 24-28).

It would have been obvious to one of ordinary skill in the art to use an optic or acoustic alarm in the system of Boesch as taught by Tashiro. Optic and acoustic alarms already exist in vehicles for status alerts such as seatbelts, jammed door, low gas, etc. These are the simplest and most universally understood ways to alert a driver and are commonly known in the art.

4.

In addition to those teachings presented by Boesch addressed supra, claims 24 is rejected under 35 U.S.C. 103(a) as being unpatentable over Boesch in view of Walker (US pat 5248957).

Boesch discloses wheel dynamics based on wheel rotational speeds.

Boesch fails to disclose a wheel dynamics variable representing the tire condition is determined by forming a difference between wheel rotational speeds of wheels located diagonally to each other.

Walker teaches a wheel dynamics variable representing the tire condition is determined by forming a difference between wheel rotational speeds of wheels located diagonally to each other (column 2 lines 29-36).

It would have been obvious to one of ordinary skill in the art to modify the system of Boesch to additionally monitor diagonally arranged wheels as taught by Walker. This allows inconsistencies between drive axle and non-drive axle as well as side-loading issues to be compensated for by looking at a wheel from each scenario (Boesch column 3 sections 1 and 3).

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jonathan Moffat whose telephone number is (571) 272-2255. The examiner can normally be reached on Mon-Fri, from 7:15-3:45.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, John Barlow can be reached on (571) 272-2269. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

JM



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